nucleic acid

<biochemistry, molecular biology> Linear polymers of nucleotides, linked by 3', 5' phosphodiester linkages. In DNA, deoxyribonucleic acid, the sugar group is deoxyribose and the bases of the nucleotides adenine, guanine, thymine and cytosine. RNA, ribonucleic acid, has ribose as the sugar and uracil replaces thymine. DNA functions as a stable repository of genetic information in the form of base sequence. RNA has a similar function in some viruses but more usually serves as an informational intermediate (mRNA), a transporter of amino acids (tRNA), in a structural capacity or, in some newly discovered instances, as an enzyme.

The spontaneous loss of the amino groups of cytosine (yielding uracil), methyl cytosine (yielding thymine) or of adenine (yielding hypoxanthine). It can be argued that the presence of thymine in DNA in place of the uracil of RNA stabilises genetic information against this lesion, since repair enzymes would restore the GU base pair to GC.

(18 Nov 1997)

Previous: nucleation, nuclei, nuclei anteriores thalami, nuclei arcuati, nuclei basales
Next: nucleic acid base, nucleic acid conformation, nucleic acid denaturation

Published at the Dept. of Medical Oncology, University of Newcastle upon Tyne

nucleic acid (noo-klē′ik, -klā′ik)

A family of macromolecules, of molecular masses ranging upward from 25,000, found in the chromosomes, nucleoli, mitochondria, and cytoplasm of all cells, and in viruses; in complexes with proteins, they are called nucleoproteins. On hydrolysis they yield purines, pyrimidines, phosphoric acid, and a pentose, either d-ribose or d-deoxyribose; from the last, the nucleic acids derive their more specific names, ribonucleic acid and deoxyribonucleic acid. Nucleic acids are linear (*i.e.,* unbranched) chains of nucleotides in which the 5′-phosphoric group of each one is esterified with the 3′-hydroxyl of the adjoining nucleotide.

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nucleotide

<biochemistry> Phosphate esters of nucleosides. The metabolic precursors of nucleic acids are monoesters with phosphate on carbon 5 of the pentose (known as 5' to distinguish sugar from base numbering).

However many other structures, such as adenosine 3'5' cyclic monophosphate (cAMP) and molecules with 2 or 3 phosphates are also called nucleotides.

(18 Nov 1997)

Previous: nucleoskeletal DNA, nucleosome, nucleosomes, nucleospindle, nucleotidase, nucleotidases
Next: nucleotide 3'-pyrophosphokinase-2',3'-cyclic monophosphokinase

nucleoside

<biochemistry> Purine or pyrimidine base linked glycosidically to ribose or deoxyribose, but lacking the phosphate residues that would make it a nucleotide.

Ribonucleosides are adenosine, guanosine, cytidine and uridine. Deoxyribosides are deoxyadenosine, deoxyguanosine, deoxycytidine and deoxythymidine (the latter is almost universally referred to as thymidine).

(18 Nov 1997)

Previous: nucleoproteins, nucleoreticulum, nucleorrhexis, nucleosidase, nucleosidases
Next: nucleoside analogue, nucleoside bisphosphate, nucleoside deaminases